HIGH YIELD POINTS FOR ENDOCRINE EXAMS SCE(UK)

Dr Rana Muhammad Sadiqi

Consultant D&E

INDEX

- Pre-lecture self assessment
- Renin and aldosterone
- DM
- DM medications
- Mechanism of action of drugs
- Side effects of drugs
- Primary aldosteronism
- Pheochromocytoma
- ODST vs UFC
- Important lab diagnosis
- Indications of RX in Subclinical thyroid disease
- CAH
- Cushing syndrome/adrenal insufficiency
- Important genetic mutations
- Pregnancy
- PCOS
- Important numbers in endocrinology
- Dyslipidemia
- MODY
- Inheritance pattern

INDEX

- Thyroid catncers
- HbA1c
- Important endocrine treatments
- Mitotane
- Medications affecting test
- Insulin pump
- Miscellaneous high yield facts
- Insulin dose calculations for enteral feed
- Important syndromes
- ICPI
- Adrenal incidentaloma
- Hypercalcemia
- Important topics for Exams
- Match the answers
- Hypoglycemia
- Pituitary
- Post lecture self assessment
- Questionnaire

PRE LECTURE SELF-ASSESSMENT

1. HbA1c target before conception?
2. Side effects of mitotane?
3. Test of choice for cyclical and subclinical Cushing's?
4. Hormones levels elevated in anorexia nervosa?
5. Half life of CBZ, PTU, thyroxine?
6. TSH targets post thyroidectomy for DTC?
7. Indication of immediate referral to ophthalmologist ?
8. Example and indication of FGF 23 inhibitor?
9. Important features of HPT-JT syndrome?
10. Inheritance pattern of pseudohypoparathyroidism?

RENIN AND ALDOSTERONE

- **LOW RENIN LOW ALDOSTERONE:**

1.AME 2.liddle 3.RTA4 4.Cushing 5.NCCAH 6.11BHSD2 def

- **LOW RENIN HIGH ALDOSTERONE:**

1. Conns 2.BAH 3.ACC 4.GRA 5.BB_

- **HIGH RENIN HIGH ALDOSTERONE :**

1.RAS 2. Reninoma 3.CCF 4.cirrhosis 5.nephrotic 6.barters 7.Gitelman 8.diuretics 9.HTN

10. Renal hypoperfusion 11. Pre-eclampsia

12. mineralocorticoid resistance

RENIN AND ALDOSTERONE

- **HIGH RENIN LOW ALDOSTERONE:**

1.ACEI 2.ARB 3.CCAH 4.Addison’s

- **NORMAL RENIN NORMAL ALDOSTERONE:**

1.Essential HTN 2.CCB 3.Alpha blocker

DM

- C peptide: <200-T1, 200-600 MODY/indeterminate, >600-T2
- DKA: 123,0.1 U/ kg, 0.25 U/kg, targets bicarb >3, glucose<3, ketone <0.5, resolution ketone <0.6, pH >7.3
- KPD: DKA, Glucose toxicity, insulin dependant, hypo, beta recovery
- Hyperglycaemia: GC, infection, acromegaly, Cushing, pheochromocytoma, dextrose, enteral, TPN
- MS : glucose, htn, TG, HDL, abdominal circumference
- Euglycemic DKA: pregnancy, starvation, alcohol, insulin, SGLT2 I
- DKA ppt : sepsis, stress, skip. Surgery, substance, something ,steroid, SGLT2I, pregnancy ,pump
- LADA:1.5,35-50, carb sensitive,+ab, decreased c peptide, normal lipids.

DM Medications

- GLP1RA:

1. Incretin, weight loss, Dec hypo, S/c, PO
2. Inc insulin, Dec glucose, slow emptying, Inc satiety
3. S/E : GI/N/pancreatitis, thyroid C cell/MTC/MEN

- Metformin-B12 def, TZD-bone fracture, bladder cancer, DPP4I – HF, pancreatitis, joint, SGLT2I- GU, hypovol, low BP, DKA, amputation, bone fracture, fournier .

MECHANISM OF ACTION

1. **Denosumab:** Binds RANKL, prevents RANKL binding to RANK, decreased osteoclast survival and function, decreased bone resorption.
2. **Metyrapone:** 11 beta hydroxylase inhibitor
3. **PTU:** TPO and DI1 inhibitor
4. **Fibrate:** PPAR alpha agonist.

Increased LPL activity, increased VLDL clearance.

5. **Tolvaptan :** Competitive VR2 antagonist.

SIDE EFFECTS OF DRUGS

1.Ipilimimumab:

Autoimmune disease (Hypophysitis, adrenalitis)

2. Bisphosphonate:

Osteonecrosis of jaw (treat with teriparatide)

3. Teriparatide:

Osteosarcoma (CI in HARROP : Hypercalcemia, ALP, renal, radiation, OS, pagets)

4. Radio iodine:

Teratogen, hypothyroidism, exacerbates GO.

5. mitotane:

AI, neurotoxicity, skin rash, LFTs.

Primary aldosteronism

Confirmatory test not needed if

- Hypokalemia
- Suppressed Renin
- PAC >20

AVS needed if

- CT normal or B/L disease
- Unilateral disease with age >35

Pheochromocytoma

- Adequate alpha blockade: clinically nasal stuffiness, orthostasis, tachycardia, hemodilution on labs
- Sensitivity:plasma mets , MRI
- Specificity: urine mets, MIBG
- Paraganglioma : noradrenaline, lack PNMT
- Increased dopamine, malignant, hypotension, increase 3MT
- Pheochromocytoma screen: FFHHIP
- Genetic screening: BEAM

ODST vs UFC

ODST (SIR)

- Subclinical Cushing's
- Adrenal Incidentaloma
- Renal failure

UFC (PEC)

- Pregnancy
- Epilepsy
- Cyclical

IMPORTANT LAB DIAGNOSIS (QUESTIONS)

1. High fT4, low TSH, low RAIU, low thyroglobulin, negative antibodies?
2. Raised 18OH and oxocortisol, low renin , high aldosterone ?
3. Low Ca, low PO4, normal 25OHD, high ALP, high PTH, high 1,25 OHD?
4. Low K, high Renin, high aldosterone, Low Mg, Low urinary calcium, mutation in SCL12A3 gene?
5. Low oestrogen, low AMH, FSH>40, high LH, positive steroid cell Ab, karyotype?

IMPORTANT LAB DIAGNOSIS (QUESTIONS)

6. High T4, high TSH, increased SHBG, increased alpha SU, no response of TSH to TRH or T3, decrease in TSH on octreotide?
7. UOP more than 3 litres, vasopressin levels increase and no rise in urine osmolality on FDT, no change in urine osmolality after desmopressin, (low K, high Ca)?
8. Low Na, K, Ca, PO4, Mg, Zn, Glucose.

Low GnRH, LH, FSH, Oestrogen , Testosterone, T3.

Normal PRL, TSH, T4.

High Cortisol, GH?

9. Low Ca, normal PTH, GNAS1 mutation, Ellsworth Howard test?
10. Apo E2/ E2 gene, high IDL and chylomicron, high cholesterol, high TG?

IMPORTANT LAB DIAGNOSIS (ANSWERS)

1. Thyrotoxicosis factitia
2. GRA
3. VDDR type 2 (receptor type)
4. Gitelman’s syndrome
5. POF
6. TSHoma
7. AVP resistance
8. Anorexia nervosa
9. Pseudohypoparathyroidism
10. Type 3 hyperlipidaemia/Dysbeta

Indications of Rx in Subclinical thyroid disease

- subclinical hypothyroidism:
- TSH <6.9, age<65, Sx
- TSH 7-9.9, age >65, Sx
- TSH 7-9.9 age <65
- TSH >10

- Subclinical hyperthyroidism
- Age >65
- THS<0.1
- Age >65, TSH 0.1-0.39, CV
- Age <65, TSH <0.1, Sx, graves/goiter.
- AF, decreased BMD

CAH

- TART: decrease steroids compliance, increase androST, US atrophy, decrease GNRH, LH, FSH, T
- AR 1:4 if both parents carriers, half F so 1:8 F, (steroid)
- Preg use HC or pred, avoid dex
- Monitoring: ACTH, androgen,17OHP, androSt, Na, K, T, Renin, bone age, USS T, semen

CUSHING SYNDROME

- Exogenous
- Endogenous (adrenal, pituitary, ectopic)
- Non-neoplastic /pseudocushing(A to I)

A Alcohol

B BMI

C CBG High/PCOS

D DM uncontrolled/ depression

E Exercise

F Food/ anorexia

G GC resistance

H HCG

I Illness

ADRENAL INSUFFICIENCY

- Low Cortisol, high ACTH, +ve antibody (addisons disease)

- Low Cortisol,High ACTH,-VE 21 OH antibody

Causes

Haemorrhage, infection, infiltration, ALD

Raised 17OHP-CAH

Raised VLCFA-ALD

IMPORTANT GENETICS/ MUTATIONS (QUESTIONS)

Name the mutations

1. Multiple cases of acromegaly in a family with no MEN/carney features?
2. Adrenal insufficiency with hypertonic tetraparesis?
3. Severe rickets with spinal cord compression?
4. Hypercalcemia with uterine malignancy?
5. Diabetes in young with renal cysts?

IMPORTANT GENETICS/ MUTATIONS (QUESTIONS)

- Name the disease:

6. Sequestasome 1 mutation?
7. PTEN mutation?
8. CTLA4 mutation?
9. AIRE gene?
10. LDL receptor mutation?

IMPORTANT GENETICS/ MUTATIONS (ANSWERS)

1. AIP
2. ALD
3. PHEX
4. HPRT2/CDC 73
5. HNF 1 beta
6. Paget’s disease
7. Cowden syndrome
8. Graves disease
9. APS 2
10. FH

Pregnancy

- Preconception: HbA1c 48, Glucose 4-7,5-7, stop statin/ ACEI/ARB, start folic acid 5mg, BP <140/90, TSH <2.5, renal referral if cr >120, ACR >30, TP >0.5, eye laser if PDR.
- Aspirin 75mg 12-36 weeks, BP >129/79 (LMN), increase thyroxine by 30-50% , PTU in first trimester, BM 5.3,7.8,6.4
- Inc hormones: E,P, PRL, cortisol, HCG, HGH, HPL
- Inc chemicals: TNF A , IL6, CRP, leptin, adeponectin,
- Worsening of PDR: Inc mitogenic GF, rel anemia, hypercoagubility, rapid tight glucose.
- Malformations: neural tube, cardiac,skin, GU, GI, Caudal regression syndrome

PCOS

- Inc androgen: ovarian, HPG, IR(inc insulin, theca hypertrophy)
- NIH- <8, androgen.

  ROH- <8, androgen,>10,12.

  AES androgen (TT, FT, SHBG, DHEAS)

Rx: menses : COCP, E,P

Metabolic: MF, TZD, GLP1RA

Hirsutism: E, Spironolactone

Fertility: clomiphene

IMPORTANT NUMBERS IN ENDOCRINOLOGY (QUESTIONS)

1. Size of adrenal incidentalloma for indication of surgery?
2. Dose of insulin in FRIII for HHS?
3. Level of cortisol post pituitary surgery to stop steroid?
4. Half life of carbimazole, PTU & thyroxine?
5. % of agranulocytosis/allergy after carbimazole , hepatotoxicity with PTU?
6. Washout period before ARR for BB, ARA, HRT?
7. AGHDA score to start, re assess and stop growth hormone treatment?
8. The rate of remission in Graves on ATD?
9. BMI targets to start pharmacological/surgical treatment for obesity?
10. Risk of T1DM if present in mom, dad, sibling, MZ twin?
11. BMI and previous baby birth weight for high risk GDM screening?
12. CPR for AVS and IPSS?
13. suppression tests for Conns not needed if?

IMPORTANT NUMBERS IN ENDOCRINOLOGY (QUESTIONS)

14. AVS not needed if?
15. Delay in conception after radioiodine treatment?
16. Cut-off eGFR for metformin?
17. %of diabetes or gonadal failure in APS2?
18. Dose equality for CBZ/PTU & HC/Prednisolone/dexamethasone?
19. Malignancy risk associated with thy3,4,5?
20. Age and frequency of screening colonoscopy in acromegaly?
21. Ideal timing for surgery in pituitary apoplexy and radiotherapy in Langerhan's cell histiocytosis?
22. Insulin sensitivity/ correction factor?
23. Insulin to carbohydrate ratio?
24. Sick day rules for T1DM?
25. Treatment for subclinical hypothyroidism, TSH threshold for treatment and target TSH.
26. TSH targets post thyroidectomy for DTC

IMPORTANT NUMBERS IN ENDOCRINOLOGY (ANSWERS)

1. 4cm
2. 0.05 units/kg/hr
3. >450 nmol/L
4. Carbimazole 6-8hrs, PTU 1.5 hrs, thyroxine 7days
5. Agranulocytosis 0.1% allergy 1%, Hepatotoxicity 0.1%.
6. BB 2 weeks, ARA 4 weeks, HRT 6-8 weeks
7. start >11, re assess 9 months , stop if improvement of <7
8. 50%
9. Pharmacological (28+ comorb or 30) surgery (35+ comorb or 40)
10. mom 2% dad 8% sibling 10% MZ twin 40%
11. BMI >30 baby weight >4.5kg
12. AVS 2 without and 4 with ACTH, IPSS 2 without 3 with CRH
13. PAC>20 (hypokalaemia, suppressed renin)

IMPORTANT NUMBERS IN ENDOCRINOLOGY (ANSWERS)

14. Age <35 (hypokalaemia, raised ARR, adenoma on CT)
15. 6 months
16. 30
17. 5%
18. 5mgCBZ=50mgPTU, 4mgPred=20mgHC=0.75mgdexa(420.75)
19. 3-20%, 4-80%, 5-95%
20. age >40yrs, frequency 5 yearly
21. within 8 days for pituitary apoplexy, within 10days for LCH
22. 130/TDD
23. 400/TDD
24. Ketones 1.5-3 : **1**0%of TDD every 2 hrs QA
    ketones >3= **2**0% of TDD every 2 hrs QA
    increase background by **3**0-**4**0% (**1234**)
25. Treat if TSH >10, aim TSH of 0.5 to 3.0
26. Without RRA 0.3-2.0, with RRA below 0.1

Dyslipidemia

- 1LP 2LD B adds V 3E 4 more
- Pancreatitis type 1,4
- AD type 2,4
- CVD risk (no risk 1,5- mod risk 3,4- high risk 2)
- Indications of Rx of hypercholesterolemia

1. ASCVD
2. LDL >190
3. LDL 70-189, age 40-75, DM
4. LDL70-189, age 40-75, no DM, CV risk 7.5%

- VLDL-TG-E2/E2-FDL
- LDL-Chol-ApoB-FCH
- HDL-Chol-ApoA-FHAL

MODY(choose the correct ones)

- BMI>40
- No AI condition
- +ve GAD
- AR
- Cystic kidney disease
- Penetrance 40%
- Glucose >22
- Age <30
- >2 units/kg/day insulin
- 1st degree relatives with diabetes
- Glucose 7-14
- AD
- -ve antibodies
- Graves disease
- Normal BMI
- Non transient neonatal diabetes before 6 months
- Penetrance 10%
- <0.5units/kg/ day insulin
- Age >50
- No family hx

INHERITANCE PATTERN

AUTOSOMAL DOMINANT

- GRA
- Liddles
- VMMNTS
- MODY
- Carney
- FH
- Cowden
- Pseudo hypoparathyroidism
- Gordon
- RTH
- FIPA
- MEN1
- HPTJT
- FDH
- ADH
- P Jeghers S

INHERITANCE PATTERN

AUTOSOMAL RECESSIVE

- AME
- Barter’s/ gitleman
- CAH
- APS1
- Alstrom
- Bloom
- Tangier
- Wolfram
- Loran
- LPL deficiency
- VDDR 1& 2
- Pendred
- Allgrove
- FDL
- 5 alpha reductase deficiency
- LMB

INHERITANCE PATTERN

X linked Recessive	X linked dominant	various
ALD	XLH/VDRR	Kallman (AD,AR,XL)
AIS	Fragile X syndrome	FHH (AD, AR)
G6PD deficiency		DI (AD, AR, XL)
Dents disease		OI (AD, AR)
		1* GHD (AD, AR, XL)
		CA hypoplasia (AR,XL)
		GC resistance (AD, AR)

Thyroid cancer

Indications Of total thyroidectomy:

- Size greater then 4cm
- Size 1-4cm +risk
- Oncocytic hurthle
- Multi focal,b/l
- Extra capsular, extra thyroidal
- PT3 , PT4A
- Family hx
- Lymphadenopathy, mets.

Thyroid cancer

- USS findings
- Physical findings
- Clinical features
- Dynamic risk stratification:

incomplete response (suppressed TG >1, stimulated TG>10,rising TG, disease on scan)

- TSH targets
- 0.3-2
- O.1-0.5
- <0.1

HbA1c

- ***Causes of false positive HbA1c:***

Iron,B12, folate deficiency

Asplenia

Increase bilirubin, urea, TG

RBC transfusion.

- ***Causes of false negative HbA1c:***

Blood loss, haemolysis, sickle

Splenomegaly, ESRD

Vit C, E

RBC Transfusion

IMPORTANT ENDOCRINE TREATMENTS

1. STEROIDS:

ADRENAL

- GRA
- AME
- CAH
- Addison's
- GC resistance
- ACTH resistance

PITUITARY

- Pituitary Apoplexy
- Parasellar inflammatory conditions

THYROID

- AIT 2
- Thyroid storm
- Graves ophthalmopathy
- De Quervain's thyroiditis
- Rapidly enlarging goitre

MISC

- Vitamin D intoxication
- Hypercalcemia of malignancy
- VIPoma

IMPORTANT ENDOCRINE TREATMENTS

AMILORIDE

- Conns
- Liddle

BISPHOSPHONATES

- Osteoporosis
- Pagets
- OI
- Hypercalcemia of immobilisation
- Polyostosis of MAS

INDOMETHACIN

- AVP Resistance
- Barter's
- Paroxysmal hemicrania of pituitary tumour

OCTREOTIDE

- TSHoma
- PRTH
- Acromegaly
- NFPA
- NET
- Carcinoid
- Postural hypotension
- Autonomic diarrhoea
- GIP Dep B/L Adrenal hyperplasia
- ZES

Mitotane

- High risk ACC (stage 3, R 1 resection, Ki 67 >10)
- Effects of mitotane: inc TBG, SHBG,CBG
- Effects of mitotane: dec TSH, fT4,fT
- Monitor: levels, lipids,LFT, Renin.

Medications affecting test

- ARR

1. -: MRA,Renin inhibitor, amiloride- increase PRA, 4-6 week
2. -: ACEI, ARB, diuretics, increase PRA, 1-2 week
3. -: CCB, increased PRA, decrease PAC
4. +: BB, central AB, decrease PRA, decreased PAC

- Pheochromocytoma

1. +: measurement – PCM, mesalazine, sulfasalazine
2. +: disposition – cocaine, sympathomimetic, TCA, MAOI
3. +: levodopa, CCB, phenoxy, caffeine, nicotine.
4. MIBG 123- TCA, CCB, labetelol

- SST: HC 12hrs,pred 24hr, dex ok.

Insulin Pump

- Pump basal dose=TDD*0.75/2/24
- Over basalization: increase basal to target FPG, increase hypos
- Bob/IOB=active insulin=bolus-bolus(time/DIA)

MISCELLANEOUS HIGH YIELD FACTS (QUESTIONS)

1. Poor prognostic gene for thyroid, pituitary, MEN 2, pheochromocytoma?
2. Risk of relapse for graves disease?
3. Indication of block and replace in a euthyroid person?
4. Order of loss of hormones in hypopituitarism, radiotherapy, LH?
5. Rule out before diagnosing SIADH?
6. Indications of genetic screening in pheo?
7. Features of Kallmann Syndrome?
8. End organ damage in PHPT?
9. Polyuria, constipation, confusion in summer on a foreign trip?
10. Drug treatment of inulinoma?
11. Lab diagnosis of hungry bone syndrome?
12. High risk for GDM?
13. Indication of immediate referral to ophthalmologist?

MISCELLANEOUS HIGH YIELD FACTS (QUESTIONS)

14. Mechanism of action of metformin in PCOS?
15. FGF-23 inhibitor?
16. OHG increasing fracture risks?
17. Drugs decreasing peripheral conversion of T4 to T3?
18. Effect of raloxifene on bone, breast, blood, endometrium?
19. Effect of cinacalcet on serum and urine calcium?
20. When to stop treatment for dopamine agonist for microprolactinoma, GH in GHD in children with GHRH deficiency, treatment for osteoporosis, SSA as adjunct to RT in acromegaly?
21. Deficiency of 11 B hydroxylase?
22. T/M for PCOS?
23. Type of hyperlipidaemia causing pancreatitis?

MISCELLANEOUS HIGH YIELD FACTS (QUESTIONS)

24. i) Concentrated urine both after FDT & desmopressin?
ii) dilute urine after FDT but concentrated after desmopressin?
iii) dilute urine both after FDT & desmopressin?
25. Significance of hook effect vs macroprolactin
26. Difference between Cushing disease and ectopic Cushing
27. Difference between AME type 1&2
28. Indication of gonadectomy in male primary hypogonadism
29. Diffrential of UCCR less than 0.01.
30. Pros n cons of pituitary radiotherapy?
31 Deficiencies in various hyperlipidaemias?
32 Diabetes drugs and effect on BW?

MISCELLANEOUS HIGH YIELD FACTS (ANSWERS)

1. BRAF, RAS,Codon918, SDHB
2. Goitre, ophthalmopathy, high t4, TrAb, 1st year, young, male, smoker.
3. Pregnant lady with neonatal thyrotoxicosis
4. 1/2: GLFATPA LH:TAGG
5. **V**olume, **R**enal, **A**drenal, **T**hyroid (**VRAT**)
6. **B**ilateral, **e**xtra adrenal, **a**ge less than 50, **m**alignancy, **m**ultiple (**BEAMM**)
7. **C**left lip, **c**left palate, **a**taxia, **r**enal agenesis, sensory neural **d**eafness (**CCARDs**)
8. **c**hondrocalcinosis, nephro**c**alcinosis, **R**enal calculi, **r**enal impairment, **o**steoprosis, **O**FC, **p**seudogout, **p**ancreatitis (**2CROP**)
9. **S**arcadosis, **s**ubstrate, **s**ummer, **s**uppressed PTH, **s**teroid. (**5S**)
10. Diazoxide to control symptoms, everolimus in metastatic insulinoma
11. Low **Ca** , **M**g, **P**O4 (**CaMP)** raised ALP PTH (H/N)
12. **P**revious GDM, previous **p**erinatal death, **p**olyhydramnios, family history of DM in **1** degree relatives, family origin in high prevalence of T**2**DM, BMI >**3**0, previous baby above **4**.**5** kg (**PPP12345**)
13. **R**ubeosis iridis, **R**etinal detachment with **A**dvanced retinopathy, **V**itreous hge, neo**v**ascular glaucoma (**RRAVVI**)

MISCELLANEOUS HIGH YIELD FACTS (ANSWERS)

14. Improves insulin sensitivity, reducing serum androgen and LH, increases SHBG levels, decrease FAI
15. Burosumab
16. Roziglitazone, canagliflozin
17. **B**eta blocker, **I**odide, **P**TU, **A**miodarone, **S**teroids (**BIPAS**)
18. Good for bone and breast, bad for blood and endometrium.
19. Decreases serum Ca , no effect on urine Ca
20. Biannually, on completion of linear growth, after 5 years to check T-score at femoral neck & T-score >-2.0 , annual GHDC & GH <2.5
21. Low in ACC, inhibited by metyrapone and etomidate, deficient in CAH causing HTN, hyperandrogenism
22. General : weight loss / metformin, ovulation induction : clomiphene, menstrual irregularity: OCP , hirsutism : OCP/ antiandrogen
23. Type 1, 4, 5.

MISCELLANEOUS HIGH YIELD FACTS (ANSWERS)

24. i) primary polydipsia ii) AVP Deficiency iii) AVP resistance
25. Macroprolactin false +VE, hook effect false -ve
26. **P**otassium, **A**CTH, **C**RH, **H**DDST, **I**PSS (**PACHI**)
27. Ratio of urinary tetrahydrocortisol and allo-tetrahydrocotisol to tetrahydrocotisone is >10 times in type 1 and normal type 2
28. XX/XO (mixed gonadal dysgenesis)
29. FHH, Renal insufficiency, Vitamin D deficiency
30. Pros : cavernous sinus disease , cons : optic chiasm disease.
31. 1 LP, 2 LD, b adds V, 3 is E, 4 gets more
32. Dec:GLP1ag, SGLT-2i, MF Neutral: DPP4i inc: TZDi, SU, Insulin

INSULIN DOSE CALCULATION FOR ENTERAL FEED

A. CHO intake from feed= CHO content gm /100ml× infusion rate ml/hr× duration÷100

B. CIR:

naive10, TDD<40=8 TDD>40=6

C. Insulin requirement for feed: A÷B

(1/2 @start ½ @ mid point)

eg: 12.3×75×20/10×100=18.45

D. Basal insulin=BW×0.1

IMPORTANT SYNDROMES

- ***Carney***: AD, cutaneous, cardiac myxoma, Cushing's (PPNAD), inactivating mutation of PRKAR1A genes, LCCST, thyroid adenoma
- ***McCune Albright:*** somatic mosaicism for gsp mutation, polyostotic fibrous dysplasia, precocious puberty, café-au-lait spots, ACTH independent Cushing's, GNAS1 gene activating mutation, thyroid nodule
- ***VHL:*** AD, CNS hemangioblastoma, retinal angioma, renal cysts/ carcinoma(death), endolymphatic sac tumour, pancreatic NET, pheochromocytoma (20%)
- ***Turner***: X0, POI, aortic coarctation , osteoporosis , hypothyroidism, renal, ENT, karyotype

Follow-up (annual) BM, BP, TFT, lipids, FBG,LFT

(3-5 yearly) echo and bone density, hearing test

Gonadectomy if XY

Rx: **Puberty**: E/P/HRT.

Fertility: ovum donation, IVF.

Growth: GH age 7 year.

IMPORTANT SYNDROMES

- ***Klinfelter syndrome***: XXY, 1:500, firm testis, tall stature
  Rx: androgen, ICSI, gonadectomy if XX/XO
- ***Kallmann syndrome***: GnRH, disorderd migration of GnRH producing neuron, anosmia, CCARDs, tall, absent olfactory bulb on MRI, X linked
  (KAL1, severe), AD (FGFR1/KAL2,
  undescended testis)
- ***Zollinger Ellison's syndrome:*** high fasting gastrin, low pH
  Ix:gastrin levels after calcium gluconate or secretin inj
  Rx: PPI, SSA, surgery, chemo, embolization
- ***Cowden syndrome: (BET)*** **b**reast, **e**ndometrial, **t**hyroid (FTC) carcinomas
  AD, inact mutation in PTEN
- ***HPT-JT syndrome:*** AD, parathyroid carcinomas, maxilla/mandible ossifying fibromas, renal cysts, Wilm's tumour, uterine pathology (75%), inactivating mutation of HRPT2.

ICPI

- CTLA4, PD1, PDL1
- IV, 3-6 weekly , 2 years
- IIH:T&G recover, A life long (physio steroids)
- ICPI + Inc TSH: AI if enlarged or + Ab
- ICPI + Dec TSH: AI if enlarged or + Ab or diffuse uptake
- Inc IRAE, Inc immune activity, Inc response
- Thyroid cancer : anaplastic/DTC, emura, nivo

Adrenal incidentaloma

- Benign : <4cm, smooth, homogeneous, increase lipids, HU<10, MRI bright in loss out, mild enhancement, rapid wash out
- Malignant:>4 cm , irregular, heterogeneous, decrease lipid, HU>20, calcification, invasion, LN, >30, DCECT, <50 RWP, Increase androgen, increase dopamine, rapid enhancement, slow wash out.

HYPERCALCEMIA

- Normal or increase PTH: PHPT, FHH
- Decrease PTH: PTH related peptide, ALP, 1,25vit D, 25D, SPEP, TSH, Cortisol, IGF1/MRI Vitamin A

Indications of cinacalcet:

2.85 +sx

>3

IMPORTANT TOPICS FOR EXAM

- Causes of raised/low TBG, SHBG,IGF-1
- USS & FNAC findings for thyroid nodule
- Peptide, glycoprotein, steroid hormones
- IFG vs IGT vs prediabetes.
- Interpretation of labs: TFTs, Renin/Aldosterone, Ca/PO4,FDT , venous samplings.
- Images: MRI pituitary, fundus, Foot X-ray, thyroid scan.
- Inheritance patterns
- Sick day rules for Addison's/ T1DM
- Thyroid storm

IMPORTANT TOPICS FOR EXAM

- Radio iodine T/M
- Subclinical hyper/hypothyroidism
- AIT 1 vs AIT 2
- Thyroid cancer
- Pituitary dynamic tests
- Acromegaly management
- Causes of hyperprolactinemia
- Diagnosis of Cushing's syndrome, disease, ectopic
- DI

IMPORTANT TOPICS FOR EXAM

- Pseudoaldosteronism
- Mineralocorticoid excess
- Pheochromocytoma/ syndrome
- PCOS
- CAH
- POI/ turners
- male hypogonadism
- PHPT vs FHH
- Medications for osteoporosis
- NEN (insulinoma, glucagonoma)
- MEN

IMPORTANT TOPICS FOR EXAM

- Hypoglycaemia
- Glucose control therapy
- DKA vs HHS
- Autonomic neuropathy
- Diabetes in pregnancy/ GDM
- Hyperlipidaemias
- Diabetic retinopathy
- Diabetic foot
- DVLA
- CVOT

MATCH THE ANSWERS

1. Peptide
2. GNAS 1 Mutation
3. Hyperglycaemia
4. HHS
5. 20-25% weight loss
6. -ve antibody, normal free T3
7. Marker to differentiate between primary polydipsia to partial AVP Deficiency
8. GLP1/GIP/Glucagon agonist
9. Calcium 3.4, eGFR <30
10. DM Medication to omit day prior to surgery
11. High BP, Low aldosterone, low renin
12. Drug used in PRH And insulinoma
13. Thyroid malignancy
14. Surgery in pituitary apoplexy
15. Referral to ophthalmology within 2 weeks
16. Motor neuron disease in endocrine
17. Parathyroid carcinoma, uterine
18. Treatment of GO
19. Antibody +ve, beta cell functioning
20. Decrease renal threshold of glycosuria

1. Peziriotide
2. copeptin
3. diazoxide
4. dapaglaflozin
5. PTH
6. Teprotumumab
7. R3AM1 R3AM0
8. ALS, Kennedy disease
9. Mcune albright
10. Decrease VF,VA,GCS
11. HPTJT
12. Hyperemesis gravidarum
13. 17 alpha hydroxylase deficiency
14. Denosumb 120mg S/C
15. Serum osmolality >320
16. MODY 3
17. LADA
18. Micro calcification
19. Retatrutide
20. Terzipatide 15mg

Hypoglycemia

- Whiples: Sx, low BM, resolution
- Fasting (insulinoma) PPH (PGBH, NIPSH)
- Inc insulin : insulinoma, PGBH, NIPSH, insulin/OHG/ factitious, insulin AI,drugs
- Non insulin: sepsis, H/R/C , alcohol, GSD, adrenal, IGF,starvation, drugs(indomethacin, quinine, pentam, quinolones)
- Insulinoma: Ix (BM, insulin , pro insulin,c-peptide, 72hr fast, USS (Abd, endos, intraop), CT/MRI/PET, calcium infusion
- Rx: diet frequent, diazoxide, octreo/lanreo, verapamil, phenytoin , ethanol ablation, chemo

Pituitary

- Causes of CDI/ AVPD: CrPh, hypophys, mets, sarcoidosis
- LH: late pregnancy, early postpartum , reverse order
- Functional hypopit: GC, stress, exercise, anorexia, illness, opioids
- Pituitary pseudo tumour : pregnancy, puberty, hypothyroidism (homogeneous enhancement, uniform isotense T1)
- DHEAS is earliest marker for central adrenal deficiency
- Stalk compression hyperPRL: <1 on low DA but tumor doesn't shrink
- Order of deficiency: GLFATPAO
- Pituitary ca : PRL, ACTH. TMZ-MGMT
- Apoplexy: Steroids if dec VA, VF, GCS, BP
- NFA : null, pluri, GN/SF1, ACTH/Tpit, GH/Pit1, TSH/Pit1
- TSS for NFA: VF,VA, Ophthalmoplegia, optic chiasm, hypo pit, hyper PRL stalk, apoplexy, headache, neuro

POST LECTURE SELF-ASSESSMENT

1. Renin-aldosterone picture of 11 beta HSD2 deficiency?
2. Mechanism of action of denosumab?
3. Treatment of Liddle's syndrome?
4. Genetics of hypercalcemia with uterine malignancy?
5. Suppression test for Conns is not required in what cases?
6. Sick day rules for T1DM?
7. Lab diagnosis of hungry bone syndrome?
8. Causes of deficiency of 11 beta hydroxylase?
9. Important features of McCune Albright syndrome?
10. Inheritance pattern of AIS?

QUESTIONNAIRE

1. Difference between MODY1 and MODY 3?
2. Effect of amiodarone on TFTs?
3. Levels of 17 OH progesterone for diagnosis of CAH?
4. How to monitor adequacy of fludrocortisone?
5. Drug treatment for pituitary carcinoma and response prediction?
6. Dose of hydrocortisone to cover for fludrocortisone
7. Various Kallmann inheritance patterns with related mutations?
8. Important endocrine drugs requiring LFT monitoring?
9. Most sensitive marker for bone formation and resorption?
10. Simon broome criteria for diagnosis of FH?

It's Exam Time!
Here's a BIG

GOOD LUCK!

wish to you

© 143greetings.com